

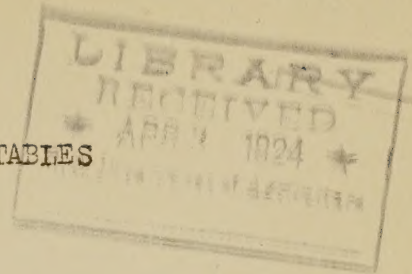
Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

1.9
A9817

OUTLINE OF YEAR BOOK ARTICLE ON FRUITS AND VEGETABLES

Revised, March 26, 1924.



- - - -

- I. Economic Importance of the Fruit and Vegetable Industry.
 - A. Value of the fruit industry, including fruit grown for home use.
 - B. Value of the vegetable industry, including home gardens.
- II. History of the Foundation and Development of the Fruit and Vegetable Industry in the United States.
 - A. Influence of native and exotic species upon the early development of the fruit and vegetable industry in the United States.
 - B. Fruits and vegetables grown by the Indians prior to the colonization period.
 - C. Fruits and vegetables introduced from Europe and other countries of the Eastern Hemisphere.
 - D. Introductions to the United States from other parts of the Western Hemisphere. (West Indies, South America, Mexico, etc.)
- III. Present Status of the Fruit and Vegetable Industry with Relation to other Lines of Agricultural Production.
 - A. Relation from a farm management standpoint.
 - 1. Types of farming that combine with fruit or vegetable production.
 - 2. Maintaining soil fertility in fruit or vegetable growing through proper cropping systems.
 - 3. Maintaining a proper labor distribution in fruit and vegetable growing.
- IV. Nutritive Value of Fruits and Vegetables and Influence upon the Development of the Industry.
 - A. Importance of fruits and vegetables in the diet of the early settlers.
 - B. Relative importance of fruits and vegetables in the diet as compared with other foods.
 - C. Relative value of fruits and vegetables in the diet as compared one with another.

V. Fruit and Vegetable Production.

A. Fruits.

1. Geographical distribution of the fruit industry.
 - a. Climate, temperature and rainfall.
 - b. Topography and elevation.
 - c. Soil.
2. Economic factors in the development of the fruit industry.
 - a. Location of points of production with respect to markets.
 - b. Regional sequence in ripening.
3. The nursery in relation to fruit growing.
 - a. Methods of propagation.
 - b. Stocks, including standard and dwarfing stocks.
Dependence on European sources.
 - c. Trees and other fruits for planting, tree grades,
dwarf trees, etc.
4. Selection of varieties for planting.
 - a. Adapted to conditions.
 - b. Suited to purpose for which grown.
 - c. Self-sterile and self-fertile varieties.
 - d. Development and improvement of varieties.
By selection. By breeding. By new introduction.
5. Orchard management and cultural practices.
 - a. Preparation of the soil for planting fruits.
 - b. Establishing the orchard or plantation.
 - c. Different systems of culture.
 - d. Maintaining the fertility of the soil.
 1. By use of commercial fertilizers and manures.
 2. Cover and green manure crops.

- e. Principles of pruning.
- f. Irrigation.
- g. Orchard heating and other methods of protection against cold.

6. Group relationships of fruits from a cultural and economic standpoint.

- a. Deciduous tree fruits.
Apple, pear, peach and nectarine, plum and prune, cherry, apricot, quince, persimmon, pomegranate, fig.
- b. Sub-tropical fruits.
Orange, lemon, grapefruit, olive, avocado, mango, pineapple, date, minor fruits.
- c. Small fruits.
Strawberry, raspberry, blackberry, dewberry, currant, gooseberry, cranberry, blueberry, minor small fruits.
- d. Grapes.
Native bunch grapes, Muscadine grapes, Vinifera grapes.
- e. Nuts.
Pecans, almonds, Persian walnuts, minor nuts.

B. Vegetables.

1. Geographical distribution of the vegetable industry.

- a. Distribution as influenced by climate.
 - (1) Length of growing season.
 - (2) Temperature and humidity.
 - (3) Topography and elevation.
 - (4) Proximity to streams and large bodies of water.
 - (5) Availability of irrigation water.
 - (6) Action of winds.
- b. As influenced by soil types.
 - (1) Sandy loam soils.
 - (2) Clay loam soils.
 - (3) Alluvial or silt loam soils.
 - (4) Muck and peat soils.

2. Economic factors that have influenced the development of the vegetable industry.

- a. Relation of development of growth of population in cities.
" " " " " " transportation.

b. Evolution of the vegetable industry.

- (1) Home gardens.
- (2) Market gardening.
- (3) Truck gardening.
- (4) Truck farming.
- (5) Special types of vegetable production - winter or out of season production in warm sections, greenhouses and frames.

3. The vegetable seed industry.

- a. Dependence upon European sources of vegetable seeds.
- b. Trend toward American production of vegetable seeds - cabbage, cauliflower, spinach, celery, etc.
- c. Breeding and selection - Introduction.

4. Cultural practices.

- a. Potatoes and sweet potatoes.
- b. Root and related crops - beet, carrot, parsnip, salsify, radish, turnip, onions, leeks, etc.
- c. Greens and salad crops - cabbage, kale, spinach, lettuce, mustard, Swiss chard, endive, sorrel, dandelion, etc.
- d. Legumes - beans, peas, etc.
- e. Special crops grown as vegetables - corn, tomatoes, eggplant, peppers, etc.
- f. Vine crops - muskmelons, watermelons, squashes, pumpkins, etc.
- g. Canning crops - corn, tomatoes, peas, beans, spinach, beets, etc.
- h. Perennial crops - asparagus, rhubarb, horse radish.

VI. Relation of Diseases, Insects, Birds and Mammals, to Fruit and Vegetable Production.

A. The influence of diseases on American fruit culture.

1. General effects of diseases.

- a. Preventing the culture of certain species and varieties.
- b. Determining and limiting the localities where certain fruits are grown.
- c. New outbreaks destroying established industries.
 - (1) Peach Yellows.
 - (2) Pear Blight.

2. Origin of fruits as related to their diseases.
3. Origin of fungus and bacterial diseases.
4. Direct losses from diseases.
5. Scientific research helping to meet the problems.
 - a. Successful methods of disease control.
 - (1) Spraying and dusting with fungicides (def.)
 - (2) Disinfection with germicides and fungicides. (def.)
 - (3) Eradication methods.
 - (4) Quarantine methods.
 - (5) Breeding and selecting resistant or immune varieties.
 - (6) Modification of cultural handling and storage methods.
- B. Insects in their relation to fruit culture.
 1. Insect conditions during early days of fruit culture in America.
 2. Conditions favoring increase in insect losses.
 - a. Increase in acreage of fruits.
 - ab. Plantings in new regions.
 - c. Increasing commerce with foreign countries and insect introductions.
 3. Early methods of insect control.
 4. Modern methods of insect control.
 5. Outstanding insecticide discoveries and influence in control practice.
 6. Effects of Hatch and Morrill Acts on Entomology with reference to fruit insects.
 7. Distribution and means of spread.
 8. Legislation, quarantine and inspection.
 9. Source and present status of fruit insects.
 - a. Native insects.
 - b. Introduced insects.
 - c. Scientific knowledge of insects as a basis for control.
 10. Examples of important pests and the evolution of control operations.

11. Biologic control of fruit insects.
12. Present losses and costs of fruit insect control.
13. Present day efficiency in fruit insect control.
 - a. Spray schedules.
 - b. Combination treatments.
 - c. Spray ring.
14. Needs and the future outlook.
 - a. Japanese beetle.
 - b. Oriental fruit moth.
 - c. Camphor scale.
 - d. Fruit flies.

C. Diseases of Vegetable crops.

1. Control of vegetable diseases by breeding for resistance.
Asparagus, cabbage, beans, tomatoes.
potatoes, peas, lettuce, celery, spinach.
2. Disease-free seed stocks.
Potato seed certification.
Sweet potatoes.
Beans.
3. Seed treatment.
Potatoes, sweet potatoes, cucumbers, cabbage, celery.
4. Soil treatment.
5. Insect transmission of diseases.
6. Spraying and Dusting.
 - a. Community center and spray ring work.
7. Markets pathology.
 - a. Prevention of loss from plant diseases in harvesting, transit, and market.
8. Plant quarantines in their relation to vegetable diseases.

D. The relation of insects to vegetable culture.

1. Effect of insects on the development of vegetable culture.
2. Economic importance.
 - a. Losses occasioned by limiting effect on vegetable area.

3. Conditions favoring increase in insect losses.

- a. Poor market conditions.
- b. Increase in acreage in vegetables.
- c. Planting in new regions.
- d. Foreign introduction.

4. Nature of injury.

- a. Direct.
- b. Transmission of plant diseases.

5. Multiplication and local spread of insects.

6. General methods for the control of vegetable insects.

- a. Biological control (Parasites, predators, fungi, bacteria, etc.)
- b. Cultural control. (Regulation of planting time - clean culture - early maturing and thrifty crop varieties - crop rotation - trap crops - destruction of hibernating quarters - cooperative cultural control - quarantine).
- c. Direct control.
 - (1) Historical.
 - (2) Spraying, dusting, fumigation, baits, mechanical control.
 - (3) Cost and efficiency of direct control.

7. New and outstanding developments in insect control practice.

- a. Nicotine dust - Calcium cyanide - Aphidozer.

8. Insecticide equipment for truck crop use.

9. Future outlook for vegetable insect control.

E. Combination insect and disease control.

F. Birds, mammals and other animals in relation to fruit and vegetable production.

1. Rodents which damage orchards, vineyards, and vegetables.

- a. Nature of the injury and animals chiefly responsible.
- b. Seasons when injury is likely to occur.
- c. Practical control or protective measures.

2. Relation of predatory animals to fruit and vegetable production.

- a. As destroyers of injurious rodents and insects.
- b. In doing direct damage to fruit as in case of coyotes.
- c. How to prevent damage.

3. Relation of birds to fruit and vegetable production.

- a. Value of birds in protecting from rodents and insects.
 - (1) Species beneficial about orchards, vineyards and truck farms or gardens.
 - (2) Character of the service rendered.
- b. Species that may be harmful locally, and preventive or protective measures to be employed.
- c. How to attract beneficial species to desired localities.

VII. Horticultural Manufactures.

A. As a basic industry.

1. Drying or dehydration.

- a. Raisins,
- b. Prunes.
- c. Apricots.
- d. Peaches (in California).
- e. Pears (" ").
- f. Figs (" ").
- g. Dates (" " and Arizona).
- h. Berries.

2. Canning and juice making; jellies.

- a. Grape and other juices.
- b. Fruits grown primarily for canning.
- c. Vegetables grown for canning.

3. Pickling.

B. Utilization of surplus.

1. Canning, drying, and manufacturing. (Apples and pears)

- a. In factories.
- b. In the home or community.

2. Cider and fruit juice making.

3. Vinegar manufacture.

4. Jams and butters.

C. Handling, storage, and marketing of the products.

VIII. Marketing Fruits and Vegetables.

A. Preparation for market.

1. Harvesting.
 - a. Labor and equipment.
 - b. Proper handling in harvesting.
 - c. Maturity.
2. Field selection, grading and packing.
3. Assembling carlot shipments.
4. Packing and warehouse operations.
 - a. Packing houses and equipment.
 - b. Grading and sizing fruits and vegetables.
 - c. Processing.
 - d. Packing.
 - e. Containers.
 - f. Carloading with reference to transit conditions.

B. Distributing fruit and vegetable shipments.

1. Distributing agencies.
 - a. Commission merchants.
 - b. Country shippers.
 - c. Cooperative and non-cooperative sales agencies.
 - d. Buying brokers.
 - e. Terminal market brokers and commission merchants.
 - f. Fruit and produce auctions.
 - g. Carlot buyers and jobbers.
 - h. Retailers.
 - i. Home markets - Roadside markets.
2. Sales methods.
 - a. Cash sales.
 - b. Track sales.
 - c. F.o.b. sales.
 - d. Delivered sales.
 - e. Consignments.
3. Local factors affecting marketing.
 - a. Relation of production to marketing.
 - b. The market area as determined by the nature of the product and handling practices.
 - c. Standardization of grades and containers.
 - d. Shipping point inspection.
4. Prices, price determining factors and their relation to the industry.

5. Miscellaneous factors affecting marketing.
 - a. Fluctuation of acreage and yields.
 - b. Crop and market information.
 - c. Storage and transportation facilities.
 - d. Foreign markets for fruits and vegetables.
 - e. Imports of fruits and vegetables.

C. Storage and transportation of fruits and vegetables.

1. Relation of storage to distribution.
 - a. Purposes of storage.
 - b. Storage at shipping point.
 - c. Transit and terminal storage.
2. Types of storage warehouses.
 - a. Air-cooled storage houses.
 - b. Cold storage warehouses.
3. Storage holdings of fruits and vegetables.
4. Physiological factors affecting the storage of fruits and vegetables.
5. The Development of rail transportation.
 - a. Influence on the industry.
 - b. Refrigerator car service.
 - c. Fast freight service.
 - d. Express service, including express refrigeration.
 - e. Fruit and vegetable freight rates.
6. Shipments under ventilation.
 - a. Equipment.
 - b. Service and practices.
7. Shipments under refrigeration.
 - a. Equipment.
 - b. Standard refrigeration.
 - c. Pre-cooled shipments.
 - d. Other types of refrigeration.
 - e. Refrigeration rights.
8. Heating in transit.
 - a. Equipment.
 - b. Rates and service.
9. Water transportation.
10. Motor transportation.

D. Cooperative organizations.

1. Characteristics of Cooperative organizations.
2. Development of cooperative marketing.
3. Present status of cooperative marketing.
4. Forms of organization.
5. Special services of cooperative marketing organizations.
6. Cooperation for production and credit.
7. Cooperative purchase of supplies.

IX. Methods of Financing the Fruit and Vegetable Industry.

- A. Individual or private enterprise.
- B. Financing by sale of stock.
- C. Federal loan banks.
- D. Cooperative growers' organizations.
- E. Promotion development.
- F. Crop insurance.

X. Federal and State Research and Informational Service to the Fruit and Vegetable Industry.

- A. Research.
 - 1. U. S. Department of Agriculture.
 - 2. State Colleges.
 - 3. State Experiment Stations (Hatch & Adams' Fund Inv.)
- B. Informational.
 - 1. Extension.
 - 2. Market News.
 - 3. Statistics.
 - 4. Crop outlook.

XI. Federal and State Regulatory Service to the Fruit and Vegetable Industry.

- A. Establishment of grades and inspection service.
- B. Legislation governing the production, handling and sale of fruits and vegetables; and regulating seed standards; containers, and inter-state shipments.
- C. Nursery inspection; Plant quarantine - foreign and domestic.

XII. Outlook for the Fruit and Vegetable Industry.

Allotment of space.

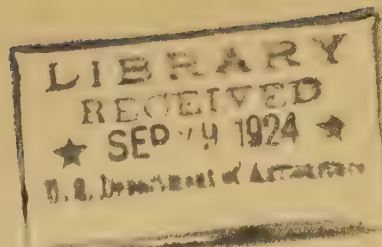
Sections I, II, III, IV	-----	30	pages.
Section V	-----	200	"
Section VI	-----	100	"
Section VII	-----	15	"
Sections VIII, IX, X, XI	-----	150	"
Section XII	-----	5	"
Total	-----	500	"

REVISED OUTLINE

of

YEARBOOK ARTICLE ON FRUITS AND VEGETABLES

April 9, 1924.



1. Economic Importance of the Fruit and Vegetable Industry, including nuts.
(This will include an introductory statement in regard to the whole article, consisting probably of a comparison of the value of the horticultural crop with the wheat crop; an inventory of the fruit and vegetable industries; and such other statements as will assist in visualizing the relative importance of these industries.)
 - A. Value of the fruit industry, including fruit grown for home use.
 - B. Value of the nut in the fruit and vegetable industry.
 - C. Value of the vegetable industry, including home gardens.
11. History of the Foundation and Development of the Fruit and Vegetable Industry in the United States.
 - A. Fruits and vegetables grown by the Indians prior to the colonization period.
 - B. Influence of native and exotic species upon the early development of the fruit and vegetable industry in the United States.
 - C. Fruits and vegetables introduced from Europe and other countries of the Eastern Hemisphere.
 - D. Introductions to the United States from other parts of the Western Hemisphere. (West Indies, South America, Mexico, etc.)
111. Present Status of the Fruit and Vegetable Industry with Relation to other Lines of Agricultural Production.
 - A. Relation from a farm management standpoint.
 1. Types of farming that combine with fruit or vegetable production.
 2. Maintaining soil fertility in fruit or vegetable growing through proper cropping systems.
 3. Maintaining a proper labor distribution in fruit and vegetable growing.

IV. Nutritive Value of Fruits and vegetables.

A. Relative importance of fruits and vegetables in the diet as compared with other foods.

B. Relative value of fruits and vegetables, including peanuts, in the diet as compared one with another.

1. Importance of having fresh vegetables and fruits through the whole year.

V. Fruit and Vegetable Production.

A. Fruits, including Nuts.

1. Geographical distribution of the fruit industry.

a. Climate, temperature and rainfall.

b. Topography and elevation.

c. Soil.

2. Economic factors in the development of the fruit industry.

a. Location of points of production with respect to markets.

b. Regional sequence in ripening.

3. The nursery in relation to fruit growing.

a. Methods of propagation.

b. Stocks, including standard and dwarfing stocks.

Dependence on European sources.

c. Trees and other fruits for planting, tree grades, dwarf trees, etc.

4. Selection of varieties for planting.

a. Adapted to conditions.

b. Suited to purpose for which grown.

c. Self-sterile and self-fertile varieties.

d. Development and improvement of varieties.

By selection. By breeding. By new introduction.

5. Orchard development and cultural practices.

a. Preparation of the soil for planting fruits.

b. Establishing the orchard or plantation.

c. Different systems of culture.

d. Maintaining the fertility of the soil.

1. By use of commercial fertilizers and manures.

2. Cover and green manure crops.

e. Principles of Pruning.

f. Irrigation.

g. Orchard heating and other methods of protection against cold.

THE HISTORY OF THE

... ..

... ..

... ..

... ..

... ..

... ..

... ..

... ..

... ..

... ..

... ..

... ..

... ..

... ..

... ..

... ..

6. Group relationships of fruits from a cultural and economic standpoint.

a. Deciduous tree fruits.

Apple, pear, peach and nectarine, plum and prune, cherry, apricot, quince, persimmon, pomegranate, fig.

b. Sub-tropical fruits.

Orange, lemon, grapefruit, olive, avocado, Mango, pineapple, date, minor fruits.

c. Small fruits.

Strawberry, raspberry, blackberry, dewberry, currant, gooseberry, cranberry, blueberry, minor small fruits.

d. Grapes.

Native bunch grapes, Muscadine grapes, Vinifera grapes.

e. Nuts.

Pecans, almonds, Persian walnuts, minor nuts.

B. Vegetables.

1. Geographical distribution of the vegetable industry.

a. Distribution as influenced by climate.

- (1) Length of growing season.
- (2) Temperature and humidity.
- (3) Topography and elevation.
- (4) Proximity to streams and large bodies of water.
- (5) Availability of irrigation water.
- (6) Action of winds.

b. As influenced by soil types.

- (1) Sandy loam soils.
- (2) Clay loam soils.
- (3) Alluvial or silt loam soils.
- (4) Muck and peat soils.

2. Economic factors that have influenced the development of the vegetable industry.

a. Relation of development of growth of population in cities.

b. " " " " " " " transportation.

c. Evolution of the vegetable industry.

- (1) Home gardens.
- (2) Market gardening.
- (3) Truck gardening.
- (4) Truck farming.
- (5) Special types of vegetable production - winter or out of season production in warm sections, greenhouses and frames.

3. The vegetable seed industry.

- a. Dependence upon European sources of vegetable seeds.
- b. Trend toward American production of vegetable seeds - cabbage, cauliflower, spinach, celery, etc.
- c. Breeding and selection - Introduction.

4. Cultural practices.

- a. Potatoes and sweet potatoes.
- b. Root and related crops - beet, carrot, parsnip, salsify, radish, turnip, onions, leek, etc.
- c. Greens and salad crops - cabbage, kale, spinach, lettuce, mustard, Swiss chard, endive, sorrel, dandelion, etc.
- d. Legumes - beans, peas, peanuts, etc.
- e. Special crops grown as vegetables - corn, tomatoes, eggplant, peppers, etc.
- f. Vine crops - muskmelons, watermelons, squashes, pumpkins, etc.
- g. Canning crops - corn, tomatoes, peas, beans, spinach, beets, etc.
- h. Perennial crops - Asparagus, rhubarb, horse radish.

VI. Relation of Diseases, Insects, Birds, and Mammals to Fruit and Vegetable Production.

A. Diseases in their relation to fruit culture.

1. General effects of diseases.

- a. Preventing the culture of certain species and varieties.
- b. Determining and limiting the localities where certain fruits are grown.
- c. New outbreaks destroying established industries.
(1) Peach Yellows (2) Pear Blight.

2. Origin of fruits as related to their diseases.

3. Origin of fungus and bacterial diseases.

4. General effect of nematodes.

5. Direct losses from diseases.

6. Scientific research helping to meet the problems.

a. Successful methods of disease control.

- (1) Spraying and dusting with fungicides (def.)
- (2) Disinfection with germicides and fungicides. (def.)
- (3) Eradication methods.
- (4) Quarantine methods.
- (5) Breeding and selecting resistant or immune varieties.
- (6) Application of methods of nematode control.
- (7) Modification of cultural handling and storage methods.

B. Insects in their relation to fruit culture.

1. Insect conditions during early days of fruit culture in America.
2. Conditions favoring increase in insect losses.
 - a. Increase in acreage of fruits.
 - b. Plantings in new regions.
 - c. Increasing commerce with foreign countries and insect introductions.
3. Early methods of insect control.
4. Modern methods of insect control.
5. Outstanding insecticide discoveries and influence in control practice.
6. Effects of Hatch and Morrill Acts on Entomology with reference to fruit insects.
7. Distribution and means of spread.
8. Legislation, quarantine and inspection.
9. Source and present status of fruit insects.
 - a. Native insects.
 - b. Introduced insects.
 - c. Scientific knowledge of insects as a basis for control.
10. Examples of important pests and the evolution of control operations.
11. Biologic control of fruit insects.
12. Present losses and costs of fruit insect control.
13. Present day efficiency in fruit insect control.
 - a. Spray schedules.
 - b. Combination treatments.
 - c. Spray ring.
14. Needs and the future outlook.
 - a. Japanese beetle.
 - b. Oriental fruit moth.
 - c. Camphor scale.
 - d. Fruit flies.

C. Diseases of vegetable crops.

1. Control of vegetable diseases by breeding for resistance.
Asparagus, cabbage, beans, tomatoes,
potatoes, peas, lettuce, celery, spinach.
2. Disease-free seed stocks.
Potato seed certification.
Sweet potatoes.
Beans.
3. Seed treatment.
Potatoes, sweet potatoes, cucumbers, cabbage, celery.
4. Soil treatment.
5. Insect transmission of diseases.
6. Spraying and Dusting.
 - a. Community center and spray ring work.
7. Markets pathology.
 - a. Prevention of loss from plant diseases in harvesting, transit, and market.
8. Plant quarantines in their relation to vegetable diseases.

D. Insects in relation to vegetable culture.

1. Effect of insects on the development of vegetable culture.
2. Economic importance.
 - a. Losses occasioned by limiting effect on vegetable area.
3. Conditions favoring increase in insect losses.
 - a. Poor market conditions.
 - b. Increase in acreage in vegetables.
 - c. Planting in new regions.
 - d. Foreign introduction.
4. Nature of injury.
 - a. Direct.
 - b. Transmission of plant diseases.
5. Multiplication and local spread of insects.
6. General methods for the control of vegetable insects.
 - a. Biological control (Parasites, predators, fungi, bacteria, etc.)

b. Cultural control. (Regulation of planting time - clean culture - early maturing and thrifty crop varieties - crop rotation - trap crops - destruction of hibernating quarters - cooperative cultural control - quarantine).

c. Direct control.

- (1) Historical.
- (2) Spraying, dusting, fumigation, baits, mechanical control.
- (3) Cost and efficiency of direct control.

7. New and outstanding developments in insect control practice.

a. Nicotine dust - Calcium cyanide - Aphidozer.

8. Insecticide equipment for truck crop use.

9. Future outlook for vegetable insect control.

E. Combination insect and disease control.

F. The relation of nematodes to the fruit and vegetable industry.

G. Birds, mammals and other animals in relation to fruit and vegetable production.

1. Rodents which damage orchards, vineyards, and vegetables.
 - a. Nature of the injury and animals chiefly responsible.
 - b. Seasons when injury is likely to occur.
 - c. Practical control or protective measures.

2. Relation of predatory animals to fruit and vegetable production.
 - a. As destroyers of injurious rodents and insects.
 - b. In doing direct damage to fruit as in case of coyotes.
 - c. How to prevent damage.

3. Relation of birds to fruit and vegetable production.
 - a. Value of birds in protecting from rodents and insects.
 - (1) Species beneficial about orchards, vineyards, and truck farms or gardens.
 - (2) Character of the service rendered.
 - b. Species that may be harmful locally and preventive or protective measures to be employed.
 - c. How to attract beneficial species to desired localities.

4. Other animal pests.

VII. Horticultural Manufactures.

A. As a basic industry.

1. Drying or dehydration.

- a. Raisins.
- b. Prunes.
- c. Apricots.
- d. Peaches (in California).
- e. Pears (" ").
- f. Figs (" ").
- g. Dates (" " and Arizona).
- h. Berries

2. Canning and juice making; jellies.

- a. Grape and other juices.
- b. Fruits grown primarily for canning.
- c. Vegetables grown for canning.

3. Pickling.

B. Utilization of surplus.

1. Canning, Drying, and Manufacturing. (Apples and pears)

- a. In factories.
- b. In the home or community.

2. Cider and fruit juice making.

3. Vinegar manufacture.

4. Jams and butters.

C. Handling, storage, and marketing of the products.

VIII. Marketing Fruits and Vegetables.

A. Preparation for market.

1. Harvesting.

- a. Labor and equipment.
- b. Proper handling in harvesting.
- c. Maturity.

2. Field selection, grading and packing.

3. Assembling carlot shipments.

4. Packing and warehouse operations.
 - a. Packing houses and equipment.
 - b. Grading and sizing fruits and vegetables.
 - c. Processing.
 - d. Packing.
 - e. Containers.
 - f. Carloading with reference to transit conditions.

B. Distributing fruit and vegetable shipments.

1. Distributing agencies.
 - a. Commission merchants.
 - b. Country shippers.
 - c. Cooperative and non-cooperative sales agencies.
 - d. Buying brokers.
 - e. Terminal market brokers and commission merchants.
 - f. Fruit and produce auctions.
 - g. Carlot buyers and jobbers.
 - h. Retailers.
 - i. Home markets -- Roadside markets.
2. Sales methods.
 - a. Cash sales.
 - b. Track sales.
 - c. F.o.b. sales.
 - d. Delivered sales.
 - e. Consignments.
3. Local factors affecting marketing.
 - a. Relation of production to marketing.
 - b. The market area as determined by the nature of the product and handling practices.
 - c. Standardization of grades and containers.
 - d. Shipping point inspection.
4. Prices, price determining factors and their relation to the industry.
5. Miscellaneous factors affecting marketing.
 - a. Fluctuation of acreage and yields.
 - b. Crop and market information.
 - c. Storage and transportation facilities.
 - d. Foreign markets for fruits and vegetables.
 - e. Imports of fruits and vegetables.

C. Storage and transportation of fruits and vegetables.

1. Relation of storage to distribution.
 - a. Purposes of storage.
 - b. Storage at shipping point.
 - c. Transit and terminal storage.

2. Types of storage warehouses.
 - a. Air-cooled storage houses.
 - b. Cold storage warehouses.
3. Storage holdings of fruits and vegetables.
4. Physiological factors affecting the storage of fruits and vegetables.
5. The Development of rail transportation.
 - a. Influence of the industry.
 - b. Refrigerator car service.
 - c. Fast freight service.
 - d. Express service, including express refrigeration.
 - e. Fruit and vegetable freight rates.
6. Shipments under ventilation.
 - a. Equipment.
 - b. Service and practices.
7. Shipments under refrigeration.
 - a. Equipment.
 - b. Standard refrigeration.
 - c. Pre-cooled shipments.
 - d. Other types of refrigeration.
 - e. Refrigeration rights.
8. Heating in transit.
 - a. Equipment.
 - b. Rates and service.
9. Water transportation.
10. Motor transportation.

D. Cooperative organizations.

1. Characteristics of Cooperative organizations.
2. Development of cooperative marketing.
3. Present status of cooperative marketing.
4. Forms of organization.
5. Special services of cooperative marketing organizations.
6. Cooperation for production and credit.
7. Cooperative purchase of supplies.

IX. Methods of Financing the Fruit and Vegetable Industry.

- A. Individual or private enterprise.
- B. Financing by sale of stock.

- C. Federal loan banks.
- D. Cooperative growers' organizations.
- E. Promotion development.
- F. Crop insurance.
- X. Federal and State Research and Informational Service to the Fruit and Vegetable Industry.
 - A. Research.
 - 1. U. S. Department of Agriculture.
 - 2. State Colleges.
 - 3. State Experiment Stations (Hatch & Adams' Fund Inv.)
 - B. Informational.
 - 1. Extension.
 - 2. Market News.
 - 3. Statistics.
 - 4. Crop outlook.
- XI. Federal and State Regulatory Service to the Fruit and Vegetable Industry.
 - A. Establishment of grades and inspection service.
 - B. Legislation governing the production, handling and sale of fruits and vegetables; regulating seed standards, containers, and inter-state shipments.
 - C. Nursery inspection, plant quarantine - foreign and domestic.
 - D. Insecticide and Fungicide regulatory work.
- XII. Outlook for the Fruit and Vegetable Industry.

177
A2814

OUTLINE OF THE 1925 YEAR BOOK

- I. Economic Importance of the Fruit and Vegetable Industry.
 - A. Value of the fruit industry, including fruit grown for home use.
 - B. The value of the vegetable industry, including home gardens.
- II. History of the Foundation and Development of the Fruit and Vegetable Industry in the United States.
 - A. Influence of native and exotic species upon the early development of the fruit and vegetable industry in the United States.
 - B. Fruits and vegetables grown by the Indians prior to the colonization period.
 - C. Fruits and vegetables introduced from Europe and other countries of the Eastern Hemisphere.
 - D. Introductions to the United States from other parts of the Western Hemisphere. (West Indies, South America, Mexico, etc.)
- III. Present Status of the Fruit and Vegetable Industry with Relation to other Lines of Agricultural Production.
 - A. Relation from a farm management standpoint.
 1. Types of farming that combine with fruit or vegetable production.
 2. Maintaining soil fertility in fruit or vegetable growing through proper cropping systems.
 3. Maintaining a proper labor distribution in fruit and vegetable growing.
- IV. Nutritive Value of Fruits and Vegetables and Influence upon the Development of the Industry.
 - A. Importance of fruits and vegetables in the diet of the early settlers.
 - B. Relative importance of fruits and vegetables in the diet as compared with other foods.
 - C. Relative value of fruits and vegetables in the diet as compared one with another.
- V. Factors Governing Fruit and Vegetable Production.
 - A. Fruits.
 1. Geographical distribution of the fruit industry.
 - a. Climate, temperature and rainfall.

V. Factors Governing Fruit and Vegetable Production (Continued).

- b. Topography and elevation.
- c. Soil.
- 2. Economic factors in the development of the fruit industry.
 - a. Location of points of production with respect to markets.
 - b. Regional sequence in ripening.
- 3. The nursery in relation to fruit growing.
 - a. Methods of propagation.
 - b. Stocks, including standard and dwarfing stocks. Dependence on European sources.
 - c. Trees and other fruits for planting, tree grades, dwarf trees, etc.
- 4. Selection of varieties for planting.
 - a. Adapted to conditions.
 - b. Suited to purpose for which grown
 - c. Self-sterile and self-fertile varieties.
 - d. Development and improvement of varieties.
 - By selection. By breeding. By new introduction.
- 5. Orchard management and cultural practices.
 - a. Preparation of the soil for planting fruits.
 - b. Establishing the orchard or plantation.
 - c. Different systems of culture.
 - d. Maintaining the fertility of the soil.
 - 1. By use of commercial fertilizers and manures.
 - 2. Cover and green manure crops.
 - e. Principles of pruning.
 - f. Irrigation.

V. Factors Governing Fruit and Vegetable Production (continued)

6. Group relationships of fruits from a cultural and economic standpoint.
 - a. Deciduous tree fruits.
Apple, pear, peach and nectarine, plum and prune, cherry, apricot, quince, persimmon, pomegranate, fig.
 - b. Sub-tropical fruits.
Orange, lemon, grapefruit, olive, avocado, mango, pineapple, date, minor fruits.
 - c. Small fruits.
Strawberry, raspberry, blackberry, dewberry, currant, gooseberry, cranberry, blueberry, minor small fruits.
 - d. Grapes.
Native bunch grapes, Muscadine grapes, Vinifera grapes.
 - e. Nuts.
Pecans, almonds, Persian walnuts, minor nuts.
7. The influence of diseases on American fruit culture.
 - a. General effects of diseases.
 - (1) Preventing the culture of certain species and varieties.
 - (2) Determining and limiting the localities where certain fruits are grown.
 - (3) New outbreaks destroying established industries.
 - (a) Peach Yellow.
 - (b) Pear Blight.
 - b. Origin of fruits as related to their diseases.
 - b. Origin of the fungus and bacterial diseases.
 - c. Direct losses from diseases.
 - d. Scientific research helping to meet the problems.
 - (1) Successful methods of disease control.
 - (a) Spraying and dusting with fungicides (def.)

- (b) Disinfection with germicides and fungicides (def.)
- (c) Eradication methods.
- (d) Quarantine methods.
- (e) Breeding and selecting resistant or immune varieties.
- (f) Modification of cultural handling and storage methods.
Oiled paper.

3. Insects in their relation to fruit culture.

- a. Insect conditions during early days of fruit culture in America.
- b. Conditions favoring increase in insect losses.
 - (1) Increase in acreage of fruits.
 - (2) Plantings in new regions.
 - (3) Increasing commerce with foreign countries and insect introductions.
- c. Early methods of insect control.
- d. Modern methods of insect control.
- e. Outstanding insecticide discoveries and influence in control practice.
- f. Effects of Hatch and Morrill Acts on Entomology with reference to fruit insects.
- g. Distribution and means of spread.
- h. Legislation, quarantine and inspection.
- i. Source and present status of fruit insects.
 - (1) Native insects.
 - (2) Introduced insects.
 - (3) Scientific knowledge of insects as a basis for control.
- j. Examples of important pests and the evolution of control operations.

k. Biologic control of fruit insects.

l. Present losses and costs of fruit insect control.

m. Present day efficiency in fruit insect control.

- (1) Spray schedules.
- (2) Combination treatments.
- (3) Spray ring.

n. Needs and the future outlook.

- (1) Japanese beetle.
- (2) Oriental fruit moth.
- (3) Camphor scale.
- (4) Fruit flies.

B. Vegetables.

1. Geographical distribution of the vegetable industry.

a. Distribution as influenced by climate.

- (1) Length of growing season.
- (2) Temperature and humidity.
- (3) Topography and elevation.
- (4) Proximity to streams and large bodies of water.
- (5) Availability of irrigation water.
- (6) Action of winds.

b. As influenced by soil types.

- (1) Sandy loam soils.
- (2) Clay loam soils.
- (3) Alluvial or silt loam soils.
- (4) Muck and peat soils.

2. Economic factors that have influenced the development of the vegetable industry.

a. Relation of development of growth of population in cities.
" " " " " " transportation.

b. Evolution of the vegetable industry.

- (1) Home gardens.
- (2) Market gardening.
- (3) Truck gardening.
- (4) Truck farming.
- (5) Special types of vegetable production - winter or out of season production in warm sections, greenhouses and frames.

3. The vegetable seed industry.
 - a. Dependence upon European sources of vegetable seeds.
 - b. Trend toward American production of vegetable seeds - cabbage, cauliflower, spinach, celery, etc.
 - c. Breeding and selection - Introduction.
4. Classification of vegetables and cultural practices.
 - a. Potatoes and sweet potatoes.
 - b. Root and related crops - beet, carrot, parsnip, salsify, radish, turnip, onions, leeks, etc.
 - c. Greens and salad crops - cabbage, kale, spinach, lettuce, mustard, Swiss chard, endive, sorrel, dandelion, etc.
 - d. Legumes - beans, peas, etc.
 - e. Special crops grown as vegetables - corn, tomatoes, eggplant, peppers, etc.
 - f. Vine crops - muskmelons, watermelons, squashes, pumpkins, etc.
 - g. Canning crops - corn, tomatoes, peas, beans, spinach, beets, etc.
5. Diseases of Vegetable crops.
 - a. Control of Vegetable Diseases by Breeding for resistance.
Asparagus, cabbage, beans, tomatoes, potatoes,
peas, lettuce, celery, spinach.
 - b. Disease-free seed stocks.
Potato seed certification.
Sweet potatoes.
Beans.
 - c. Seed treatment.
Potatoes, sweet potatoes, cucumbers, cabbage, celery.
 - d. Soil treatment.
 - e. Insect transmission of diseases.

- f. Spraying and Dusting.
 - (1) Community center and spray ring work.
 - g. Markets pathology.
 - (1) Prevention of loss from plant diseases in harvesting, transit, and market.
 - h. Plant quarantines in their relation to vegetable diseases.
6. The relation of insects to vegetable culture.
- a. Effect of insects on the development of vegetable culture.
 - b. Economic importance.
 - (1) Losses occasioned by limiting effect on vegetable area.
 - c. Conditions favoring increase in insect losses.
 - (1) Poor market conditions.
 - (2) Increase in acreage in vegetables.
 - (3) Planting in new regions.
 - (4) Foreign introduction.
 - d. Nature of injury.
 - (1) Direct.
 - (2) Transmission of plant diseases.
 - e. Multiplication and local spread of insects.
 - f. General methods for the control of vegetable insects.
 - (1) Biological control (Parasites, predators, fungi, bacteria, etc
 - (2) Cultural control. (Regulation planting time -clean culture - early maturing and thrifty crop varieties - crop rotation - trap crops - destruction hibernating quarters - cooperative cultural control - quarantine).
 - (3) Direct control.
 - (a) Historical.
 - (b) Spraying, dusting, fumigation, baits, mechanical control.
 - (c) Cost and efficiency of direct control.

g. New and outstanding developments in insect control practice.

(1) Nicotine dust - Calcium cyanide - Aphidozer.

h. Insecticide equipment for truck crop use.

(1) Machinery (limited treatment) - Appliances - etc.

i. Future outlook for vegetable insect control.

VI. Horticultural Manufactures.

A. As a basic industry.

1. Drying or dehydration.

- a. Raisins.
- b. Prunes.
- c. Apricots.
- d. Peaches in California.
- e. Berries.

2. Canning and juice making; jellies.

- a. Grape and other juices.
- b. Fruits grown primarily for canning.
- c. Vegetables grown for canning.

3. Pickling.

B. Utilization of surplus.

1. Canning and manufacturing.

- a. In factories.
- b. In the home or community.

2. Cider and fruit juice making.

3. Vinegar manufacture.

4. Jams and butters.

C. Handling, storage, and marketing of the products.

VII. Marketing Fruits and Vegetables.

A. Preparation for market.

1. Harvesting.

- a. Labor and equipment.
- b. Proper handling in harvesting.
- c. Maturity.

2. Field selection, grading and packing.

3. Assembling carlot shipments.

4. Packing and warehouse operations.

- a. Packing houses and equipment.
- b. Grading and sizing fruits and vegetables.
- c. Processing.
- d. Packing.
- e. Containers.
- f. Carloading with reference to transit conditions.

B. Distributing fruit and vegetable shipments.

1. Distributing agencies.

- a. Country shippers.
- b. Cooperative and non-cooperative sales agencies.
- c. Buying brokers.
- d. Terminal market brokers and commission merchants.
- e. Fruit and produce Auctions.
- f. Carlot buyers and jobbers.
- g. Retailers.

2. Sales Methods.

- a. Cash sales.
- b. Track sales.
- c. F.o.b. sales.
- d. Delivered sales.
- e. Consignments.

3. Local factors affecting marketing.

- a. Relation of production to marketing.
- b. The market area as determined by the nature of the product and handling practices.
- c. Standardization of grades and containers.
- c. Shipping point inspection.

4. Prices, price determining factors and their relation to the industry.

5. Miscellaneous factors affecting marketing.

- a. Crop and market information.
- b. Storage and transportation facilities.
- c. Foreign markets for fruits and vegetables.
- d. Imports of fruits and vegetables.

C. Storage and Transportation of Fruits and Vegetables.

1. Relation of storage to distribution.

- a. Purposes of storage.
- b. Storage at shipping point.
- c. Transit and terminal storage.
2. Types of storage warehouses.
 - a. Air-cooled storage houses.
 - b. Cold storage warehouses.
3. Storage holdings of fruits and vegetables.
4. Biological factors affecting the storage of fruits and vegetables.
5. The development of rail transportation.
 - a. Influence on the industry.
 - b. Refrigerator car service.
 - c. Fast freight service.
 - d. Express service.
 - e. Fruit and vegetable freight rates.
6. Shipments under ventilation.
 - a. Equipment.
 - b. Service and practices.
7. Shipments under refrigeration.
 - a. Equipment.
 - b. Standard refrigeration.
 - c. Pre-cooled shipments.
 - d. Other types of refrigeration.
 - e. Refrigeration rights.
8. Heating in transit.
 - a. Equipment.
 - b. Rates and service.
9. Water transportation.
10. Motor transportation.

D. Cooperative organizations.

1. Characteristics of Cooperative organizations.
2. Development of cooperative marketing.
3. Present status of cooperative marketing.
4. Forms of organization.
5. Special services of cooperative marketing organizations.
6. Cooperation for production and credit.
7. Cooperative purchase of supplies.

VIII. Methods of financing the fruit and vegetable industry.

- A. Individual or private enterprise.
- B. Financing by sale of stock.
- C. Federal loan banks.
- D. Cooperative growers organizations.
- E. Promotion development.
- F. Crop insurance.

IX. Federal and State Research and Informational Service to the Fruit and Vegetable Industry.

- A. Research.
 - 1. U. S. Department of Agriculture.
 - 2. State Colleges.
 - 3. State Experiment Stations (Hatch & Adams' Fund Inv.)
- B. Informational.
 - 1. Extension.
 - 2. Market News.
 - 3. Statistics.
 - 4. Crop outlook.

X. Federal and State Regulatory Service to the Fruit and Vegetable Industry.

- A. Establishment of grades and inspection service.
- B. Legislation governing the production, handling and sale of fruits and vegetables and regulating seed standards; containers; and inter-state shipments.
- C. Nursery inspection; Plant quarantine - foreign and domestic.

XI. Outlook for the fruit and vegetable industry.

